

Tool 7

Estimated Costs

This tool provides estimated costs for scoping out the methods necessary to complete a watershed plan and constructing watershed planning practices

Scoping Local Watershed Planning Costs

Rules of Thumb on Budgeting and Estimated Costs

- Project management equals 5-10% of budget
- Office time equals two times field time for assessment tasks
- Design and Contingency rules (20-30% of construction costs)
- Don't forget travel, equipment, printing
- Overhead costs may not be covered by funding sources
- Insert estimated hourly labor cost for each step to determine total cost
- Planning and implementation cost ratio should be close to 15:85
- Estimate \$150-\$200K for watershed planning costs (<50 sq mile)
- Planning costs will vary based on watershed area, stream miles, number of jurisdictions, number of stakeholders, training, and task complexity

NOTE: ALL COSTS SHOWN HERE ARE WORKING ESTIMATES AND SHOULD BE CHECKED FOR ACCURACY IN YOUR WATERSHED PRIOR TO SCOPING AND BUDGETING

Table 1: Estimated Unit Costs and Staff Effort for Watershed Planning Tasks*		
Steps for Watershed Protection Planning	Unit Applied	Level of Effort
Step 1: Develop Watershed Planning Goals		
Watershed Needs and Capabilities Assessment	Community	60 - 100 hours
Establish Baseline	Watershed	Varies, see Table 2
Stakeholder Recruitment and Education	Watershed	16 - 40 hours
Step 2: Classify and Screen Priority Subwatersheds		
Watershed Vulnerability Assessment OR	Watershed	100 - 130 hours
Comparative Subwatershed Assessment	Watershed	120 - 150 hours
Identify Priority Watersheds	Community	40 – 80 hours
Step 3: Identify Watershed Planning Opportunities		
Evaluate Local Programs and Regulations	Community	80 – 100 hours
Conduct Stream Corridor and Upland Assessments	Subwatershed	Varies see, Table 3
Manage Stakeholder Meetings	Meeting	30 - 50 hours
Refine Watershed Goals	Watershed	16 – 24 hours
Step 4: Conduct Detailed Assessments		
Develop Project Concept Designs	Watershed	Depends on the number and type of watershed projects investigated, and then carried forward to project design—See Table 4 for unit costs for each type of watershed project
Conduct Project Investigations	Watershed	
Hold Neighborhood Consultation Meeting	Neighborhood	
Inventory of Potential Projects	Watershed	24 – 40 hours
Step 5: Assemble Recommendations Into Plan		
Rank Individual Projects	Watershed	24 – 40 hours
Draft Watershed Plan	Watershed	100 - 140 hours

Table 1: Estimated Unit Costs and Staff Effort for Watershed Planning Tasks*		
Steps for Watershed Protection Planning	Unit Applied	Level of Effort
Step 6: Determine if Watershed Plan Meets Goals		
Estimate Pollutant Loads & Reductions	Watershed	120 – 180 hours
Incorporate External Plan Review	Community	60 – 80 hours
Finalize Goals, Objectives and Indicators	Watershed	24 – 40 hours
Step 7: Methods to Implement the Plan		
Adopt the Final Plan	Community	80 – 120 hours
Plan for Indicator Monitoring	Watershed	30 - 50 hours
Notes: Multiply "Effort" by "Unit Applied" to get an idea of the number of hours necessary to complete method (e.g., 3 stakeholder meeting would be 3 x 40) Estimates based on average staff efforts across a wide range of watershed conditions. Estimates are intended for guidance only. Excludes the costs of getting started (setting up watershed-based GIS, organizing core team etc.)		

Table 2: Component Tasks in Preparing Watershed Baseline		
Task	Unit Applied	Effort
Watershed Characterization	Watershed	80 hours
Land Use Analysis	Watershed	80 hours
Impervious Cover Analysis	Subwatershed	80 - 120 hours
Summarize Existing Monitoring Data*	Watershed	100 - 120 hours
Sensitive Area Analysis*	Watershed	80 - 160 hours
* does not include any field assessment		

Table 3: Rapid Field Assessment Costs			
Method	Unit Applied	Effort	Cost (@ \$50/hr)
Stream Corridor Assessment (SCA) or the Unified Stream Assessment (USA)	Stream mile	2 mile/2 staff/day	\$12,000 (for 30 miles)
RSAT or RBP-Habitat	Station	4 hours * (6 sites/day)	\$300/station
RBP-Macroinvertebrates	Station	20 hours* (6 sites/day)	\$8,000 for 10 stations
Upland Subwatershed Reconnaissance (USSR)	Square mile	2.5 sq mi/2 staff/day	\$20,000 (for 25 sq mi)
Contiguous Forest Assessment	Site	8 hours* (5 sites/day)	\$3,000 for 10 stations
Rare, Threatened and Endangered Species Assessment	Site	4 hours* (5 sites/day)	\$300/station
Wetlands Assessment	Site	4 hours* (4 sites/day)	\$300/station
*Field costs include post processing of data			

Table 4: Unit Costs for Project Assessment and Design						
Restoration Practice	Unit Applied	Candidate Project Investigation hrs	Project Concept Design hrs	30% Design hrs	Additional Work	
					Neighborhood Consultation Meeting	Engineering Design Survey
Storage Retrofit	site	4	8	40	Y	Y
On-site Retrofit	site	0.5	2	n/a	N	N
Stream Repair	survey reach	4	6	24	Y	Y

Table 4: Unit Costs for Project Assessment and Design

Restoration Practice	Unit Applied	Candidate Project Investigation hrs	Project Concept Design hrs	30% Design hrs	Additional Work	
					Neighborhood Consultation Meeting	Engineering Design Survey
Reforestation	Planting site	2	6	n/a	N	N
Discharge Prevention	problem outfall	1	4	n/a	N	Y
Source Control Plan	subwatershed	20	40	n/a	Y	N
Municipal Operations	subwatershed	20	40	n/a	N	N

Estimated Costs for Constructing Watershed Planning Practices

Table 5: Estimated Costs for Common Rural Management Practices

Practice	Type	Planning Level Construction Costs	Units
Non-Ag BMPs	Abandoned mine reclamation	Varies	Acre
	Forest harvesting BMPs	\$8 to \$30 per acre/year	Acre
	Structural shoreline control	\$350 per linear foot	Linear Foot
	Non-structural shoreline control	\$125 per linear foot	Linear Foot
	Marina pumpouts	\$12,500 per station	Station
Septic Systems	Septic hookups	\$20,000 per connection	Per system
	Septic denitrification	\$5,500 per system	
	Septic pumpout	\$125 to \$325 per system	
Crop BMPs	Nutrient Management Plan	\$ 6 acre/year	Per Acre of Treatment
	Conservation Tillage	\$17 per acre/year	
	Cover Crops	\$20 to \$30 per acre/year	
	Conservation Plans	\$350 per acre	
	Land Retirement	Varies	
	Reforestation (from crop)	\$ 500 to \$ 1500 per acre	
	Riparian forest buffers	\$ 500 to \$1000 per acre	
Animal Waste Management Systems	Riparian grass buffer	\$ 100 to \$ 500 per acre	Per system
	Livestock AWMS	\$ 65,000	
	Poultry AWMS	\$ 27,000	
Pasture BMPs	Barnyard runoff controls	\$ 7,200	Per acre treated
	Stream fencing/off-stream watering/rotational grazing	\$ 150 acre/year	
	Fencing/off-stream watering	\$ 100 acre/year	
Wetland Restoration	Off stream watering only	\$ 65 acre/year	Per acre treated
	Restoration of prior converted wetlands	\$ 1000 to \$1000 per acre	
Costs derived from CBP, 2003, DNR, 2002b, CWP, 1998. Note State and Federal Cost share money may be available for certain practices.			

Table 6: Estimated Costs for Common Urban Management Practices - DRAFT

<i>Practice</i>	<i>Type</i>	<i>Planning Level Construction Costs</i>	<i>Unit</i>
Storage Retrofits ¹	Modify existing pond	9.5K (5 to 15 K)	Per impervious acre treated
	Culvert storage	12.5 K (7.5 to 17.5 K)	
	New facility	15.5K (12.5 to 20 K)	
	ROW/conveyance	15.5 (12.5 to 30 K)	
	Parking lot	25K (10 to 40 K)	
On-site Retrofits ¹	Residential	15K (10 to 25 K)	Per impervious acre treated
	Non-Residential	25K (10 to 40 K)	
Stream Cleanup and Repair Practices	Stream cleanup	\$100 (\$0 to 1000)	Per reach cleaned
	Adopt-a-stream	\$500 (\$200 to 1000)	Per stream mile per year
	Soft bank stabilization ²	\$50 (\$15 to 75)	Per linear foot
	Hard bank stabilization ²	\$100 (\$20 to 300)	
	In-stream practices ³	\$45 (\$20 to 75)	
	Grade controls ³	\$1,800 each (\$1,200 to 3,600)	
	Natural channel design ⁴	\$250 (\$200 to 300)	
	De-channelization ⁴	\$50 (\$100-200)	
	Stream daylighting or parallel pipes ⁴	\$150 (\$50-300)	
	Fish barrier removal	\$10,000 (\$5,000 to 50,000)	Per barrier
Riparian Reforestation	Soil amendments ⁵	\$1500 (\$500 to 10,000)	Per acre
	Rubble removal	\$500 (\$200 to 1,000)	
	Invasive plant removal	\$250 (\$100 to 750)	
	Bare root trees ⁶	\$1,000 (\$575 to 1,500)	
	Container trees ⁶	\$2,000 (\$1,000 to 3,000)	
	Balled & burlapped trees ⁶	\$5,000 (\$2,500 to 7,500)	
Discharge Prevention	Repair illicit connection ⁷	\$2,500 (\$1,000 to 5,000)	Per correction
	Establish citizen hotline ⁷	\$1,300-\$3,300 startup costs \$1,500- \$4,500 annual cost ⁸	Per community
	Discharge inspection	\$300 (\$220 to 400)	Per facility, see Brown <i>et al.</i> (2004)
	Septic inspection	\$325 (\$250 to 400)	
Pervious Area	Upland reforestation	See Riparian Reforestation	Per acre
	Forest Conservation	\$8 to 30 per acre year	
	Conservation Easement	\$2500 (500 to 10,000)	
Source Control	Neighborhood stewardship	\$15 (\$5 to 30)	Per household
	Hotspot prevention plan ⁸	\$5,000 (\$2,500 to 25,000)	Per hotspot
Municipal Operations	Street sweeping	\$25 to 45	Curb mile/ year/pass
	Storm drain cleanouts	\$250 to 1000	Per catch basin
Other	Development ordinance	\$ 15,000 (5,000 to 30,000)	

Table 6: Estimated Costs for Common Urban Management Practices - DRAFT

Costs derived from *CBP, 2003, DNR, 2002, Kitchell and Schueler, 2005*. Note: State and Federal Cost share money may be available for certain practices.

Notes:

- ¹ Retrofit costs do not include land acquisition or maintenance
- ² Bank stabilization includes toe protection, bank shaping and establishment of vegetation
- ³ Costs for individual in-stream habitat and grade control practices vary, consult Manual 4
- ⁴ Costs for comprehensive stream restoration are highly site specific, depending on materials use and site conditions, and do not include costs for utility relocations, culvert replacement, land acquisition, or permitting
- ⁵ Compost and other soil amendments over 25% of total planting area
- ⁶ Tree planting costs are variable costs and depend on plant species, tree age, planting method, labor source, and tree protection, and maintenance planning
- ⁷ For more detail consult Brown *et al.* (2004)
- ⁸ Cost of preparing and implementing pollution prevention plan, including installation of limited structural storm water management practices at the site

